

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Cecil Farms PC I06-67HN(Vert)

Location SEC 6, T6N, R66W

State COLORADO

County WELD

Country USA

Rig Number H&P 326

API Number 05-123-38118

Region DJ BASIN

Field EATON

Spud Date 3/6/2014

Drilling Completed 3/14/2014

Surface Coordinates NENE, SEC 6, T6N, R66W
292' FNL, 259' FEL

Ground Elevation 4870'

K.B. Elevation 4900'

Logged Interval 1100' **To** 11718'

Total Depth 11718'

Formation NIOBRARA, B CHALK

Type of Drilling Fl... LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name EVAN HOWELL

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Other

COLUMBINE LOGGING INC

MIKE KERSCHEN

Rock Types

UNKNOWN	COAL	METAMORPHIC	SHALY SILTSTONE
ANHYDRITE	CONGLOMERATE	NO SAMPLE	SILTSTONE
BENTONITE	DOLOMITE	SALT	SILTY SHALE
BRECCIA	GRANITE	SALT-PEPPER SAND	TILL
CEMENT	GYPSUM	SANDSTONE	TUFF
CHALK	IGNEOUS	SHALE	WELDED TUFF
CHERT	LIMESTONE	SHALE COLORED	
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHALE GRAY	
CLAYSTONE	MARLSTONE	SHALY SANDSTONE	

Accessories

Fossils

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHIOPOD
BRYOZOA
CEPHALOPOD
CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA

Fossil

GASTROPOD
INOCERAMUS
OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

Anhydritic

ARGILLACEOUS
ARGILLITE GRAIN
BENTONITE
BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET

Ferruginous

GLAUCONITE
GYPSIFEROUS
HEAVY MINERAL
KAOLIN
MARLSTONE
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SILICEOUS
SILTY

Tuffaceous

Stringer

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
GYPSUM STRINGER
LIMESTONE STRINGER
MARLSTONE (CALC) STRG
MARLSTONE (DOL) STRG
SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC

Moldic

ORGANIC
PINPOINT
VUGGY

Engineering

BIT
CONNECTION (LEFT)
CONNECTION (RIGHT)
CONNECTION GAS
CORE - LOST
CORE - RECOVERED
DST INTERVAL

Fault

FORMATION TOP
GAS SHOW
MN DEPTH
NORMAL FAULT
OIL SHOW
OVERTURNED STRATA
REVERSE FAULT
SIDEWALL CORE (LEFT)
SIDEWALL CORE (RIGHT)
SLIDE
SURVEY
TRIP GAS

Wireline tested - left

Wireline tested - RT

Rounding

ANGULAR
ROUNDED
SUBANG
SUBRND

Textures

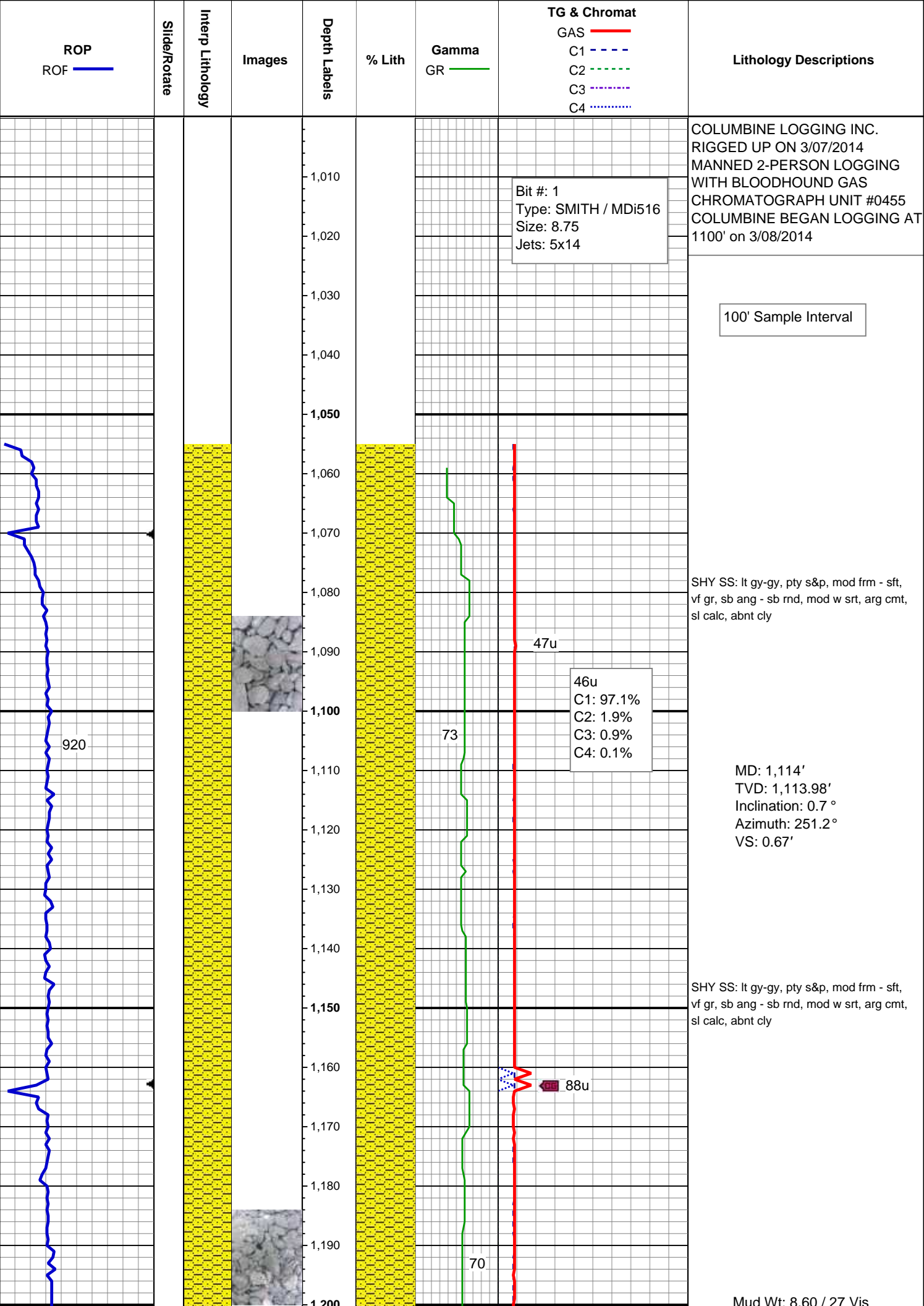
BOUNDSTONE
CHALKY
CRYPTOXLN

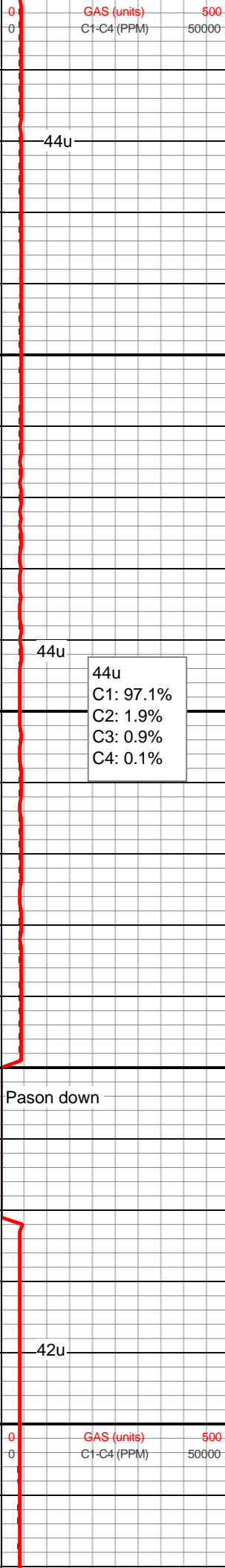
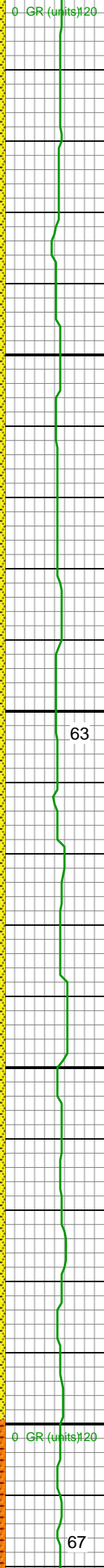
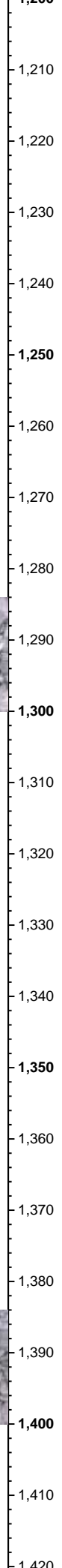
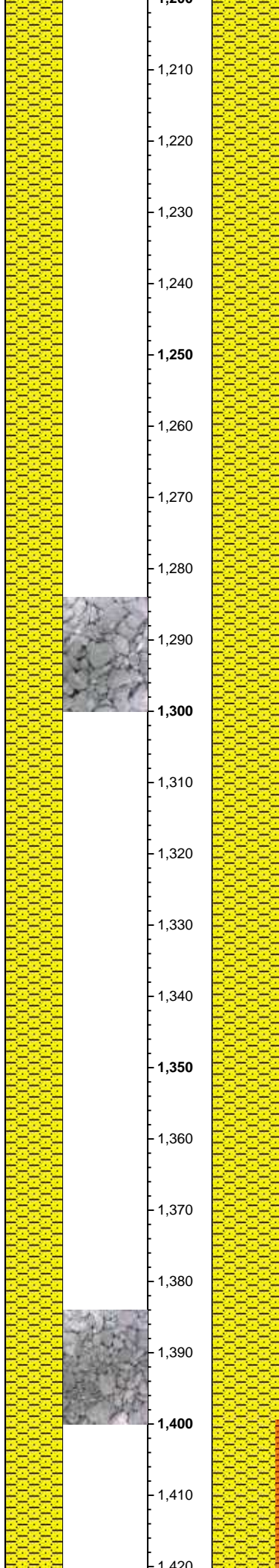
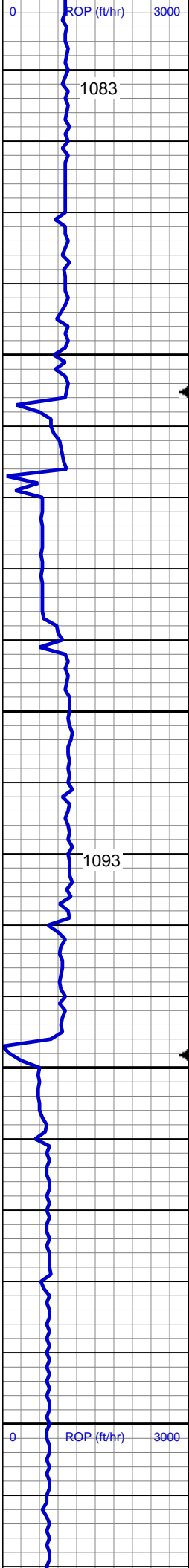
Earthy

FINELYXLN
GRAINSTONE
LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL





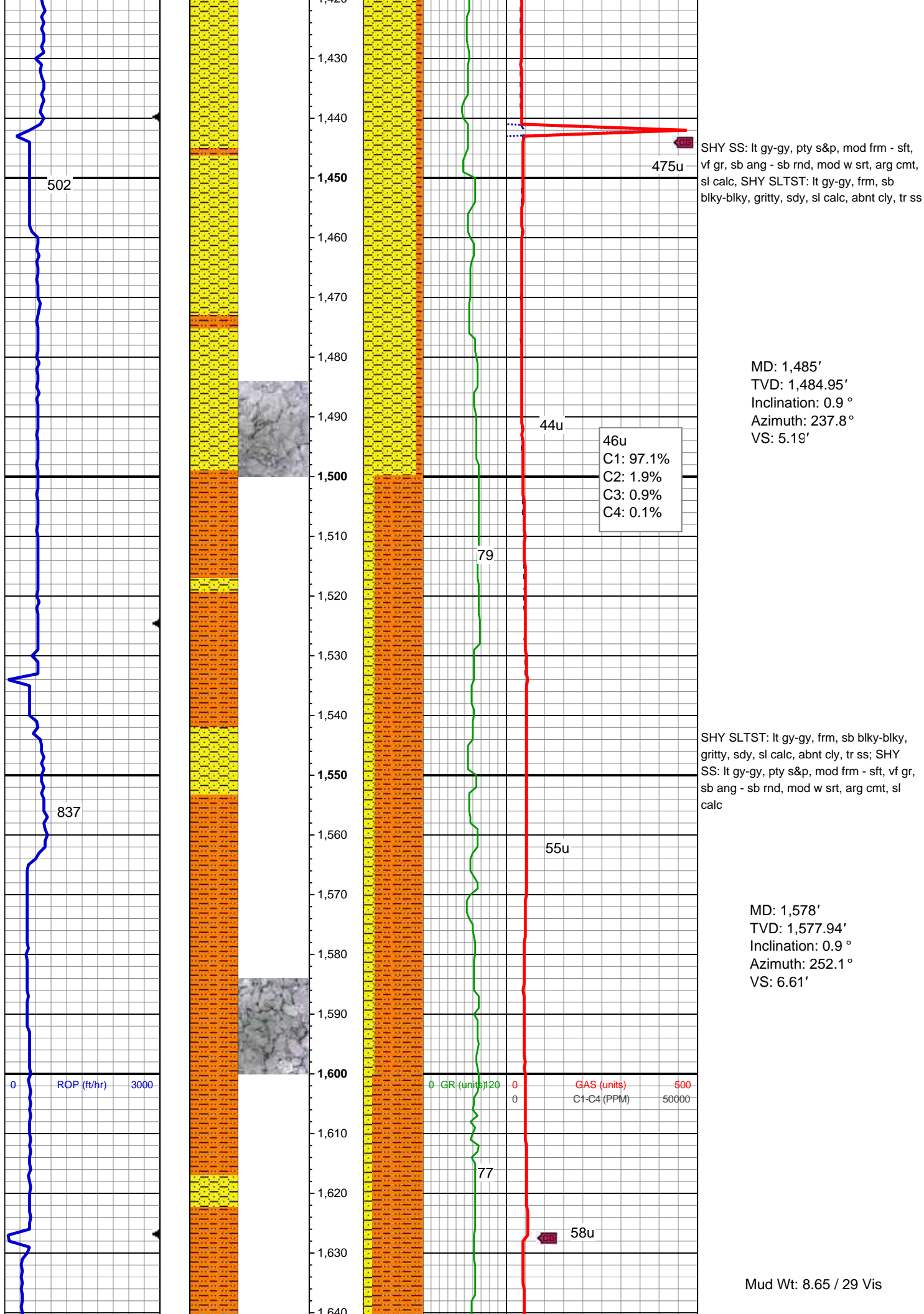
MD: 1,206'
TVD: 1,205.98'
Inclination: 0.6 °
Azimuth: 233.1 °
VS: 1.68'

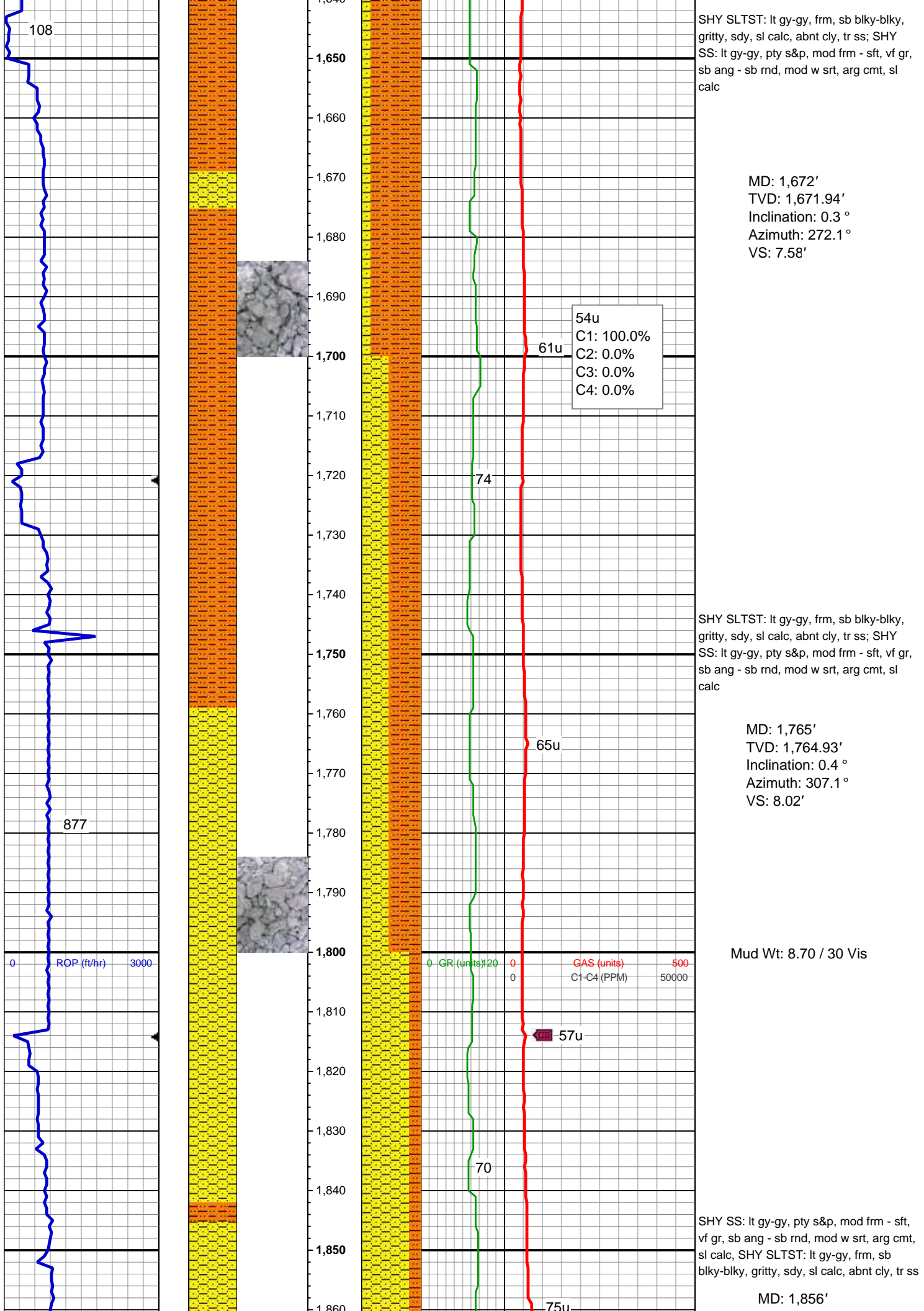
SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc, abnt cly

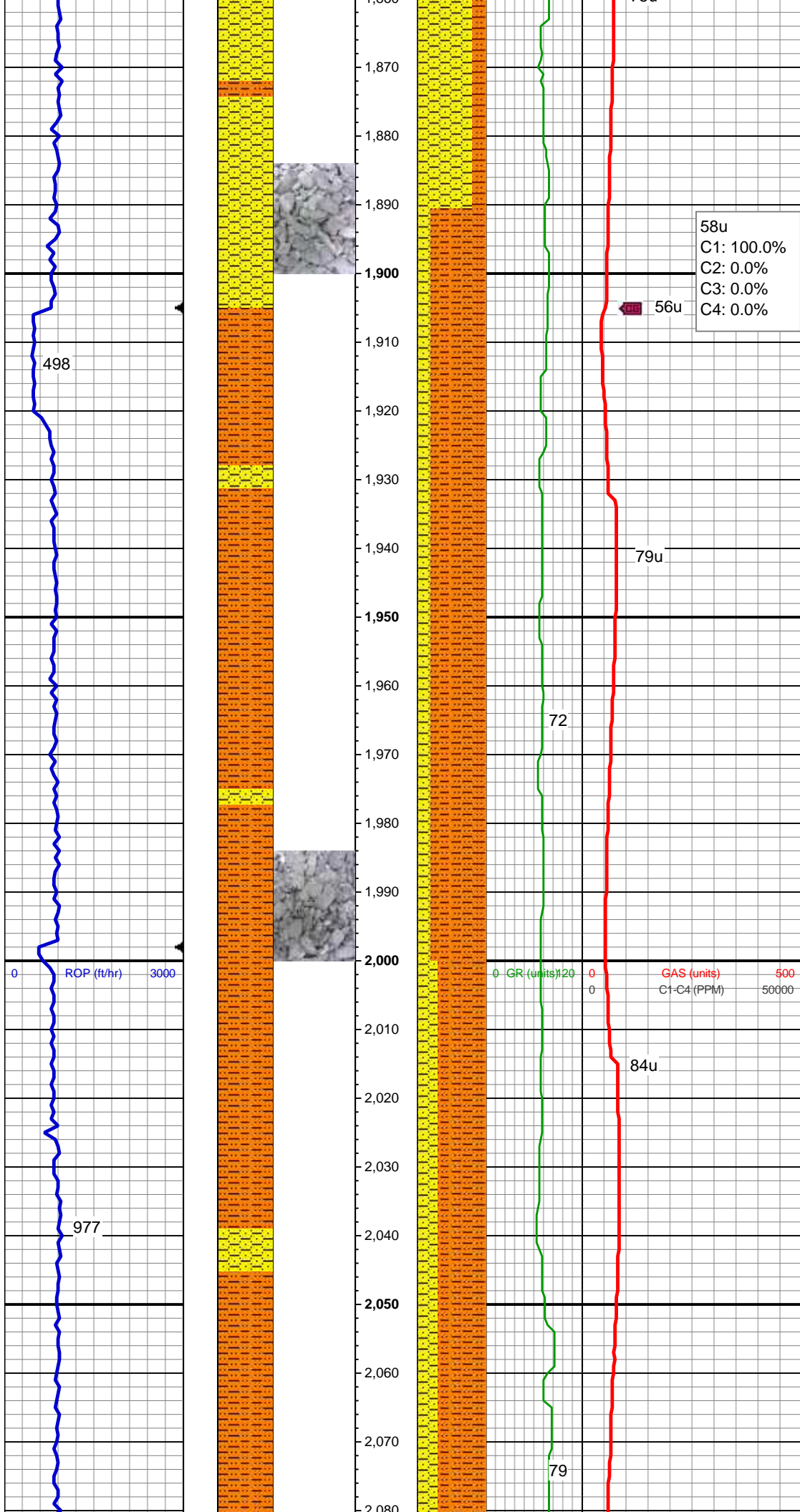
MD: 1,299'
TVD: 1,298.97'
Inclination: 0.7 °
Azimuth: 243.6 °
VS: 2.68'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc, abnt cly

MD: 1,393'
TVD: 1,392.96'
Inclination: 0.8 °
Azimuth: 243.3 °
VS: 3.88'







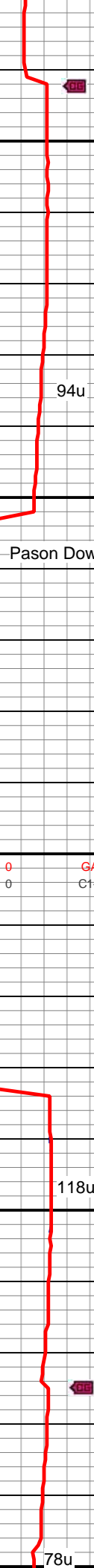
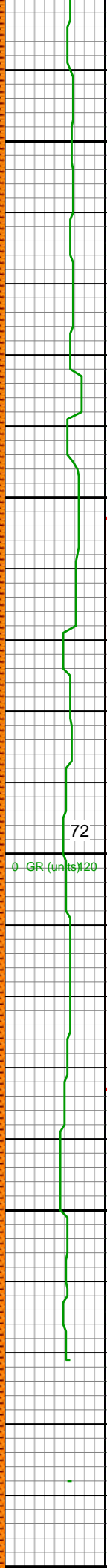
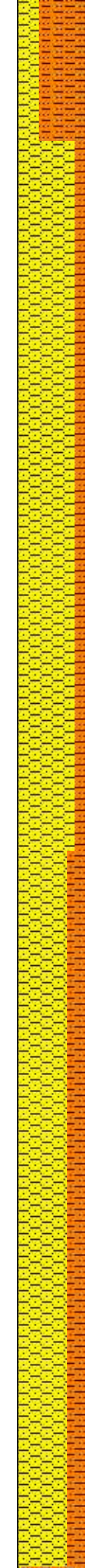
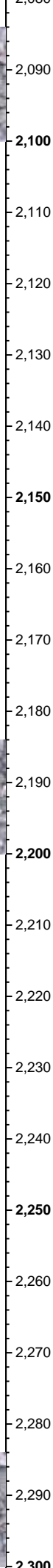
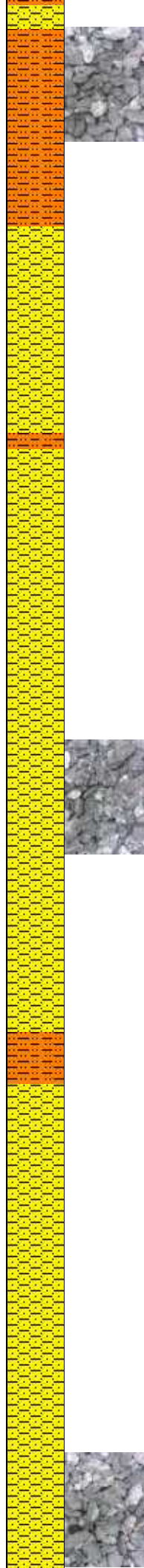
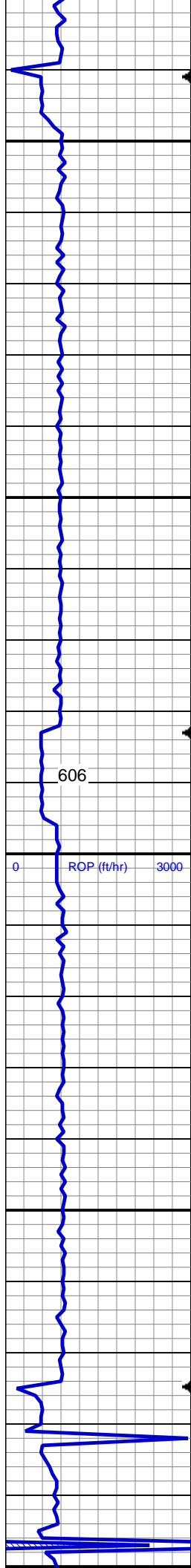
TVD: 1,855.93'
Inclination: 0.2 °
Azimuth: 276.9 °
VS: 8.37'

MD: 1,948'
TVD: 1,947.93'
Inclination: 0.3 °
Azimuth: 166.6 °
VS: 8.52'

SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 2,041'
TVD: 2,040.93'
Inclination: 0.5 °
Azimuth: 200.2 °
VS: 8.75'

SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc



109u
C1: 100.0%
C2: 0.0%
C3: 0.0%
C4: 0.0%

Mud Wt: 8.70 / 28 Vis

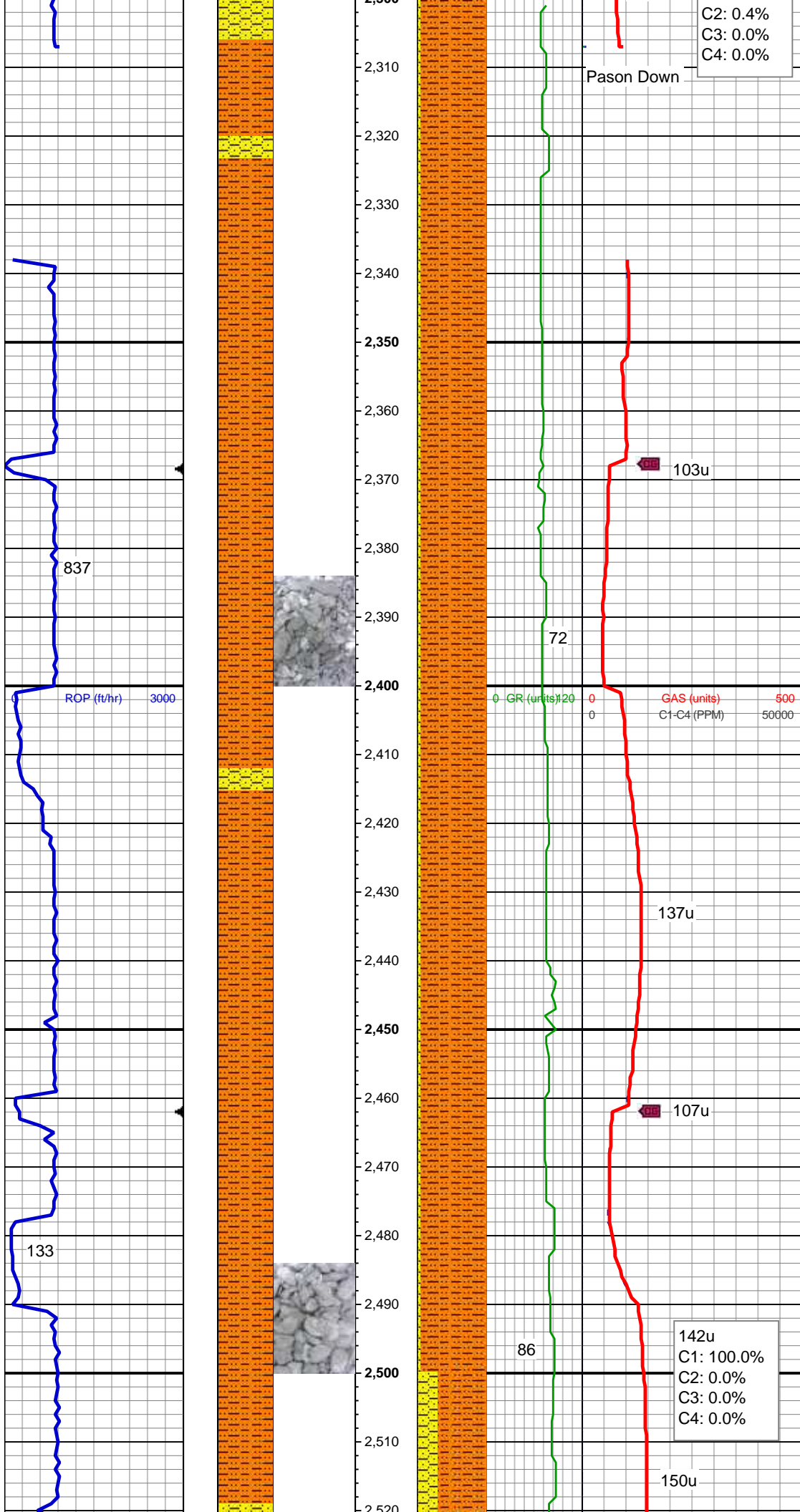
MD: 2,133'
TVD: 2,132.93'
Inclination: 0.3 °
Azimuth: 183.2 °
VS: 9.05'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc, SHY SLTST: lt gy-gy, frm, sb
blky-blky, gritty, sdy, sl calc, abnt cly, tr ss

MD: 2,226'
TVD: 2,225.93'
Inclination: 0.3 °
Azimuth: 193 °
VS: 9.23'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc, SHY SLTST: lt gy-gy, frm, sb
blky-blky, gritty, sdy, sl calc, abnt cly, tr ss

79u
C1: 99.6%



MD: 2,319'
TVD: 2,318.92'
Inclination: 0.7 °
Azimuth: 187.7 °
VS: 9.55'

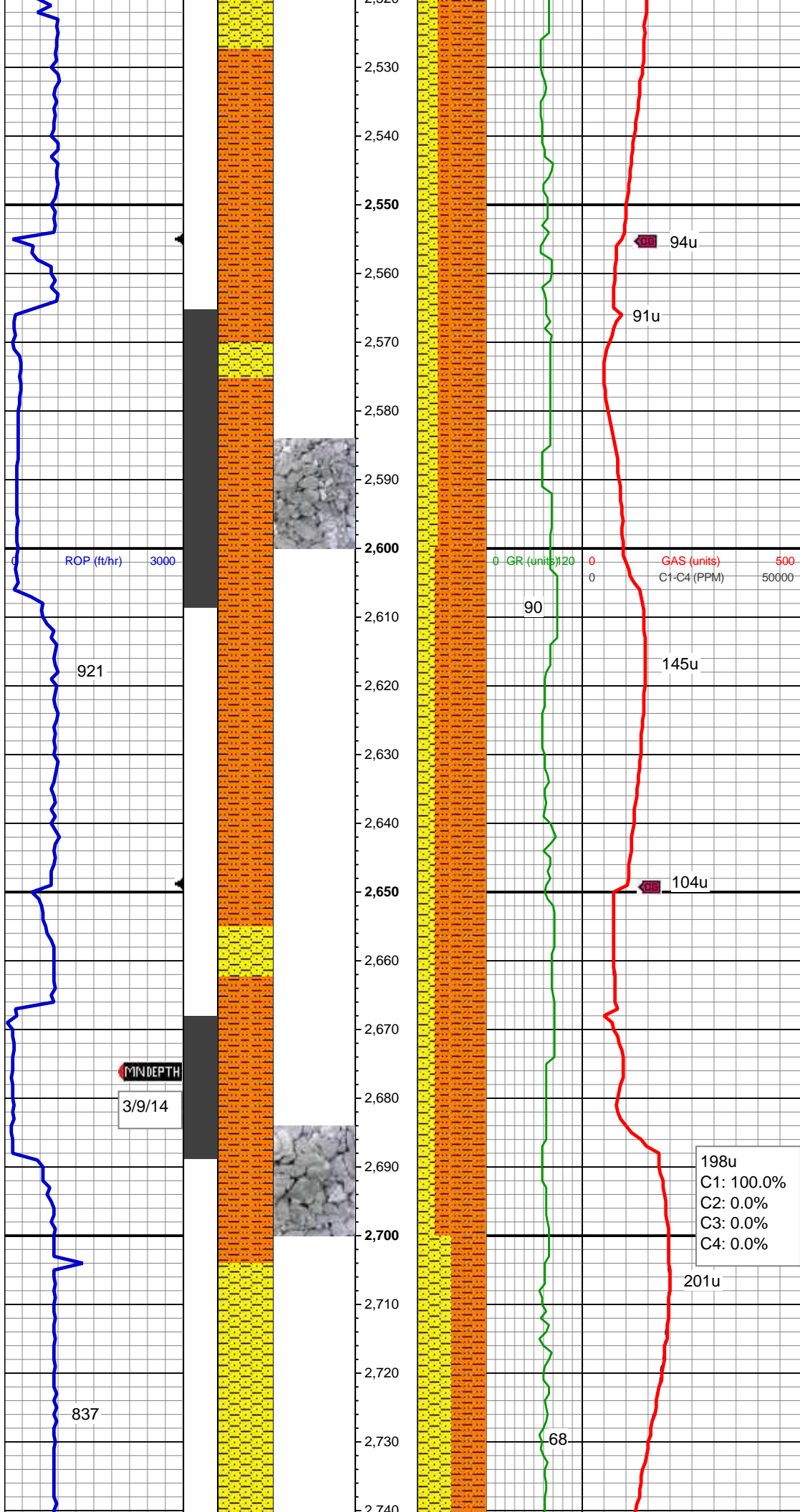
SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

Mud Wt: 8.65 / 32 Vis

MD: 2,413'
TVD: 2,412.91'
Inclination: 1.3 °
Azimuth: 154.7 °
VS: 9.54'

SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 2,506'
TVD: 2,505.87'
Inclination: 1.9 °
Azimuth: 176.1 °
VS: 9.6'



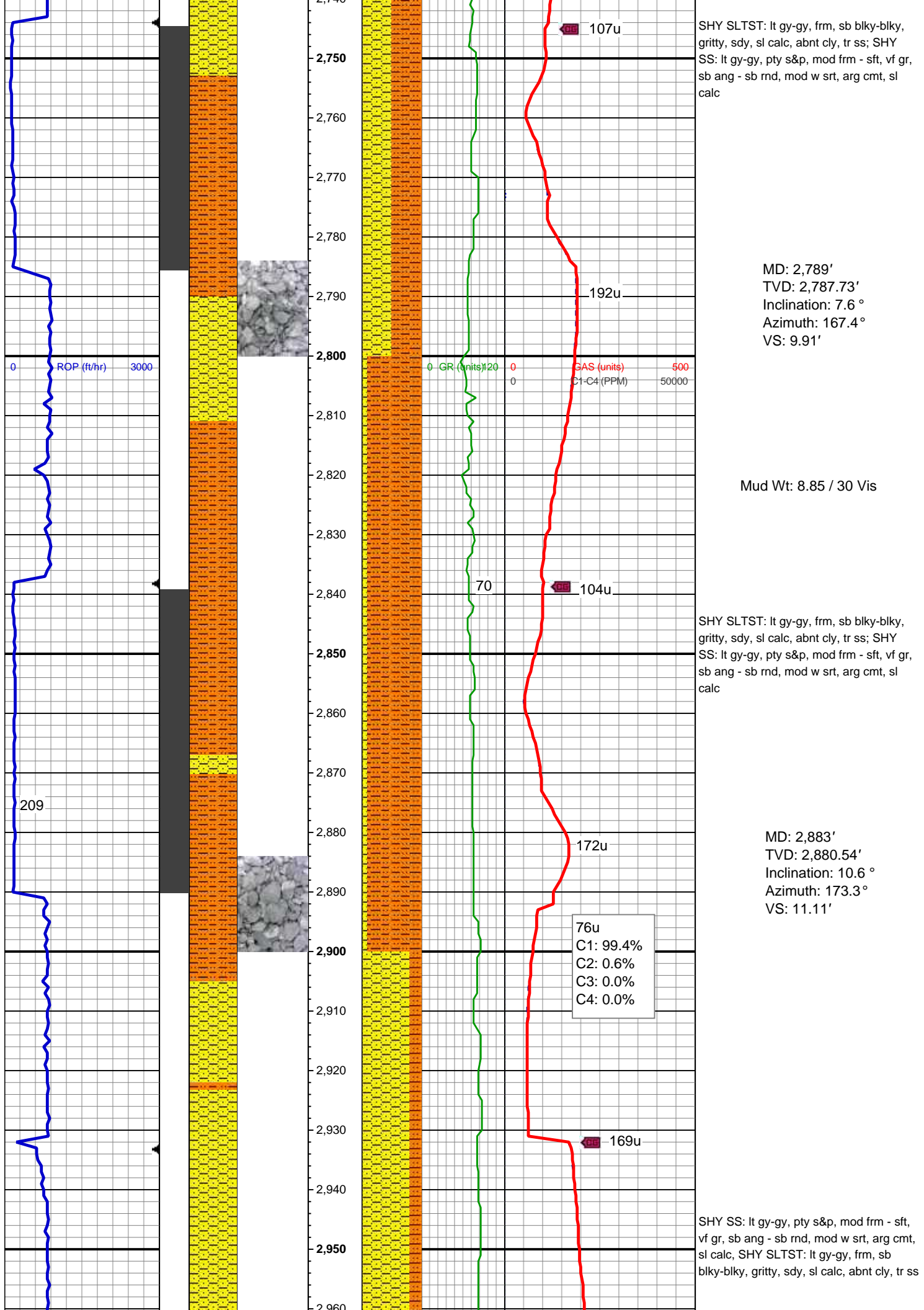
SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

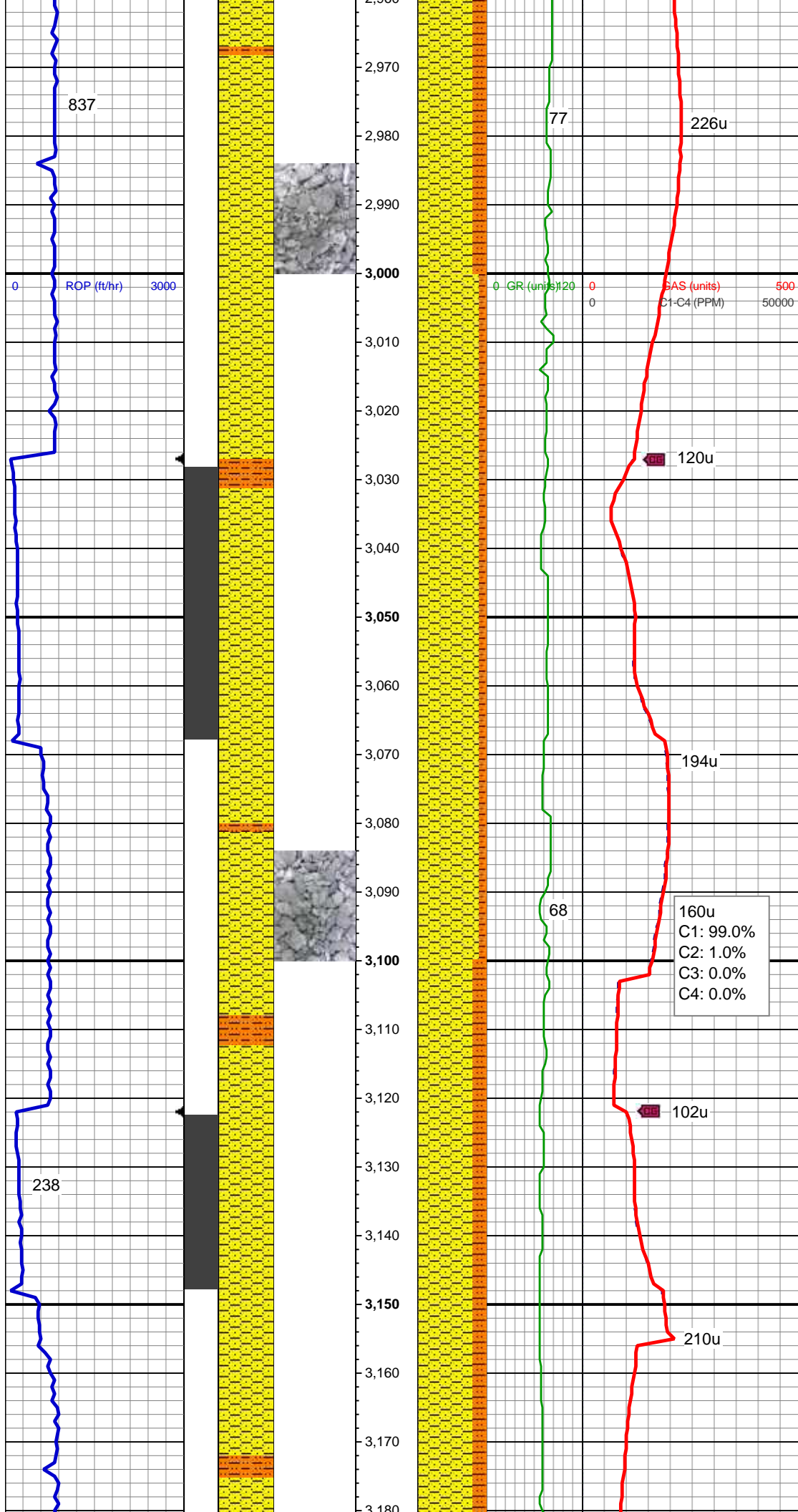
Mud Wt: 8.65 / 33 Vis

MD: 2,600'
TVD: 2,599.72'
Inclination: 4.4 °
Azimuth: 167.2 °
VS: 9.93'

SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 2,695'
TVD: 2,694.36'
Inclination: 5.6 °
Azimuth: 164.9 °
VS: 9.89'





MD: 2,978'
TVD: 2,974.23'
Inclination: 8.4 °
Azimuth: 172.6 °
VS: 12.97'

Mud Wt: 8.80 / 29 Vis

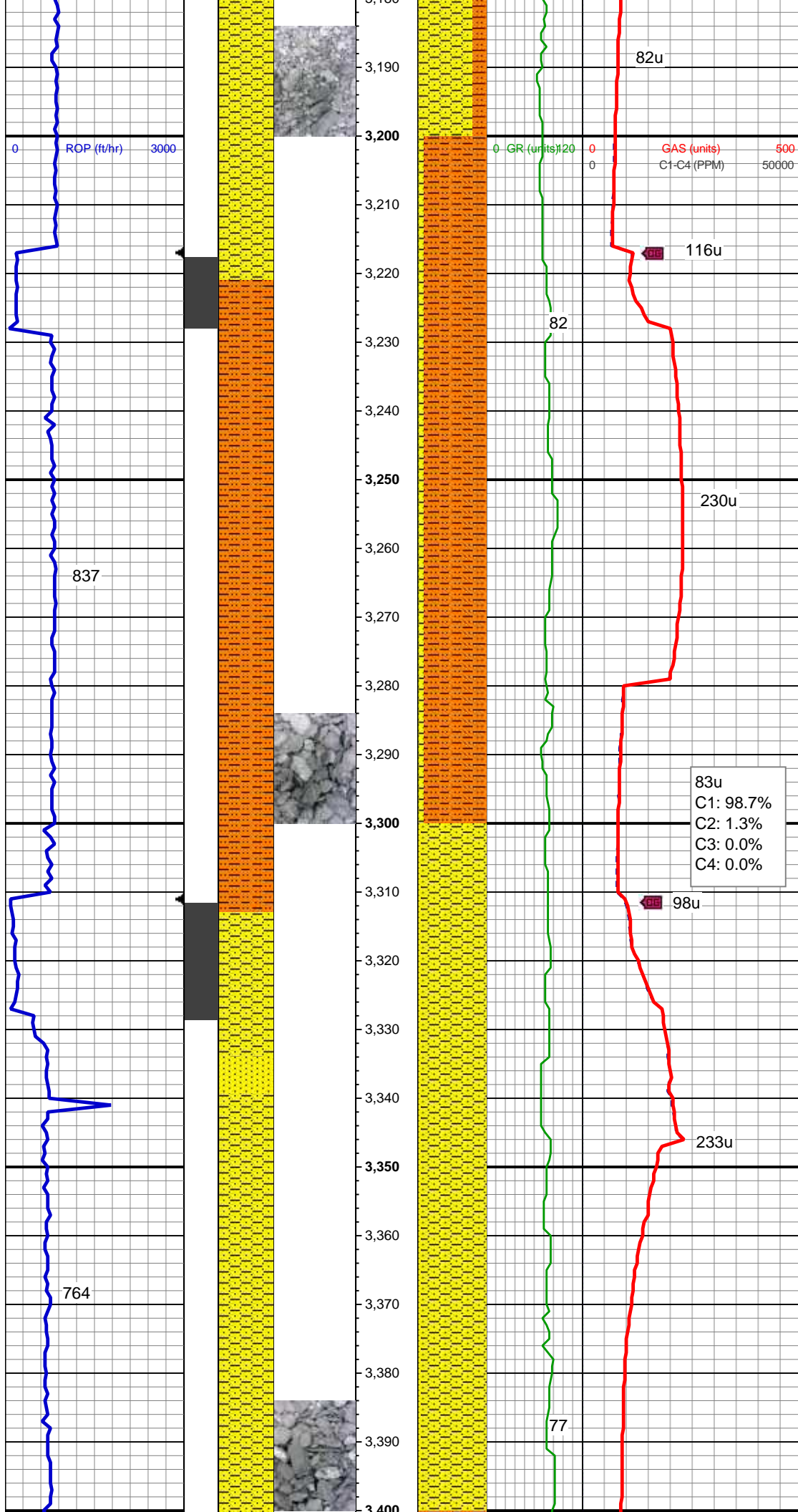
SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc, SHY SLTST: lt gy-gy, frm, sb
blky-blky, gritty, sdy, sl calc, abnt cly, tr ss

MD: 3,073'
TVD: 3,068.02'
Inclination: 9.9 °
Azimuth: 173.3 °
VS: 14.75'

160u
C1: 99.0%
C2: 1.0%
C3: 0.0%
C4: 0.0%

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc, SHY SLTST: lt gy-gy, frm, sb
blky-blky, gritty, sdy, sl calc, abnt cly, tr ss

MD: 3,168'
TVD: 3,161.4'
Inclination: 11.3 °
Azimuth: 171.7 °
VS: 16.65'

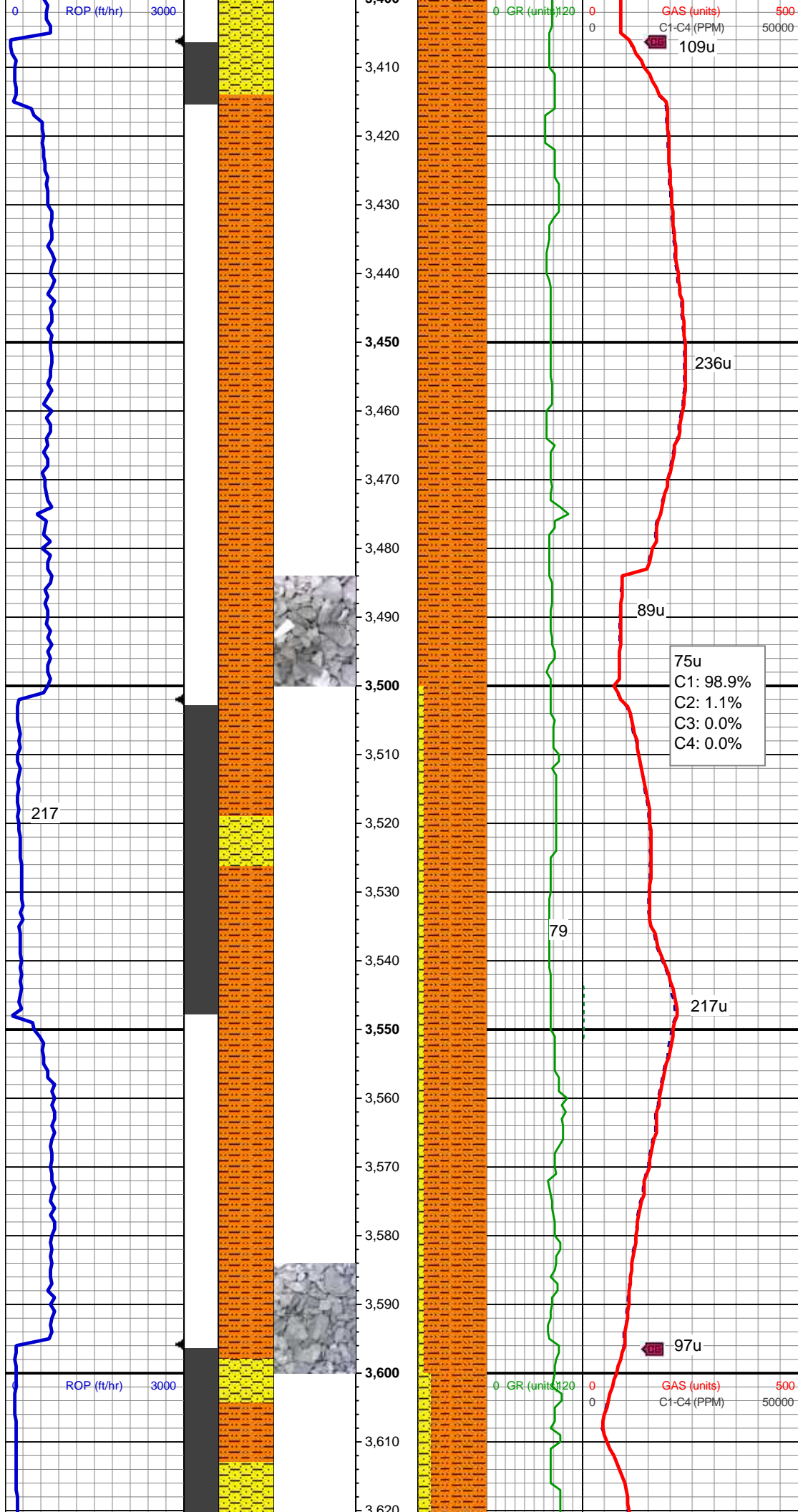


SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, abnt cly, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 3,262'
TVD: 3,253.64'
Inclination: 10.9 °
Azimuth: 172.3 °
VS: 18.48'

SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc, SS: lt gy, off wh, s&p, firm-brit, sb rnd- sb ang, f gr, s calc

MD: 3,357'
TVD: 3,347.14'
Inclination: 9.5 °
Azimuth: 162.9 °
VS: 18.98'



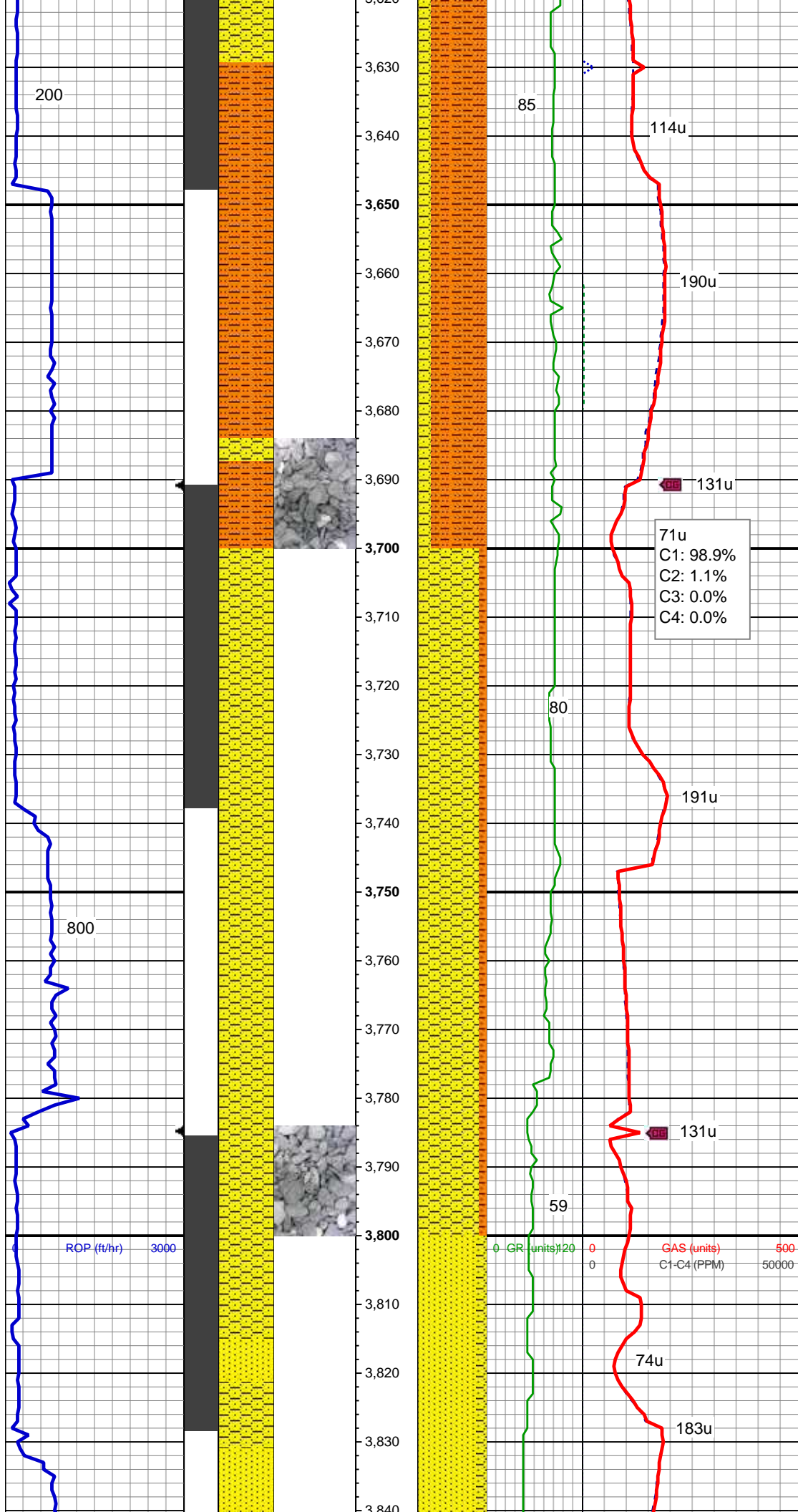
SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, tr ss

MD: 3,452'
TVD: 3,441.08'
Inclination: 7.6 °
Azimuth: 162.4 °
VS: 18.11'

Mud Wt: 8.90 / 30 Vis

MD: 3,546'
TVD: 3,534.17'
Inclination: 8.4 °
Azimuth: 156.4 °
VS: 16.53'

SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc



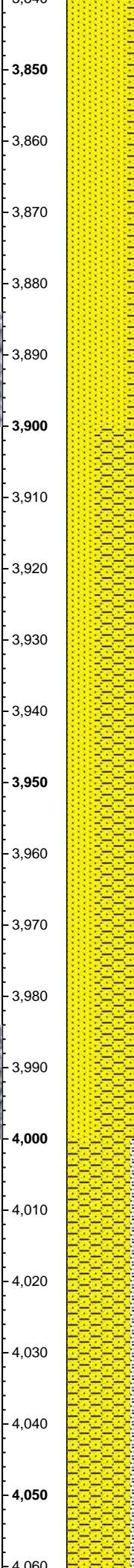
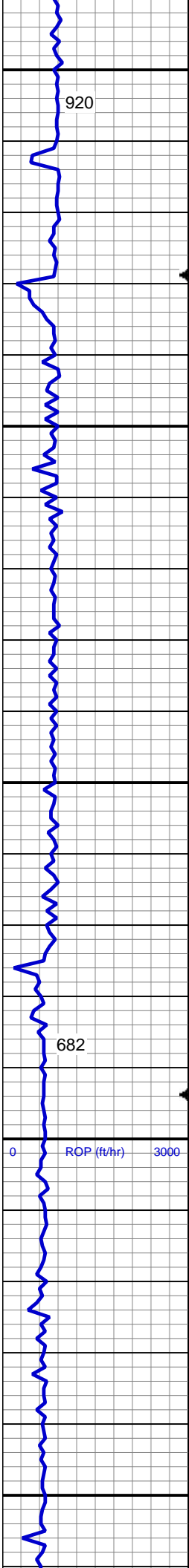
MD: 3,641'
TVD: 3,628.01'
Inclination: 9.5 °
Azimuth: 158.6 °
VS: 14.32'

SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, tr ss; SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 3,736'
TVD: 3,721.6'
Inclination: 10.3 °
Azimuth: 156.3 °
VS: 11.82'

SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc SHY SLTST: lt gy-gy, frm, sb blkly-blky, gritty, sdy, sl calc, tr ss;

MD: 3,830'
TVD: 3,813.84'
Inclination: 11.9 °
Azimuth: 161.9 °
VS: 9.65'



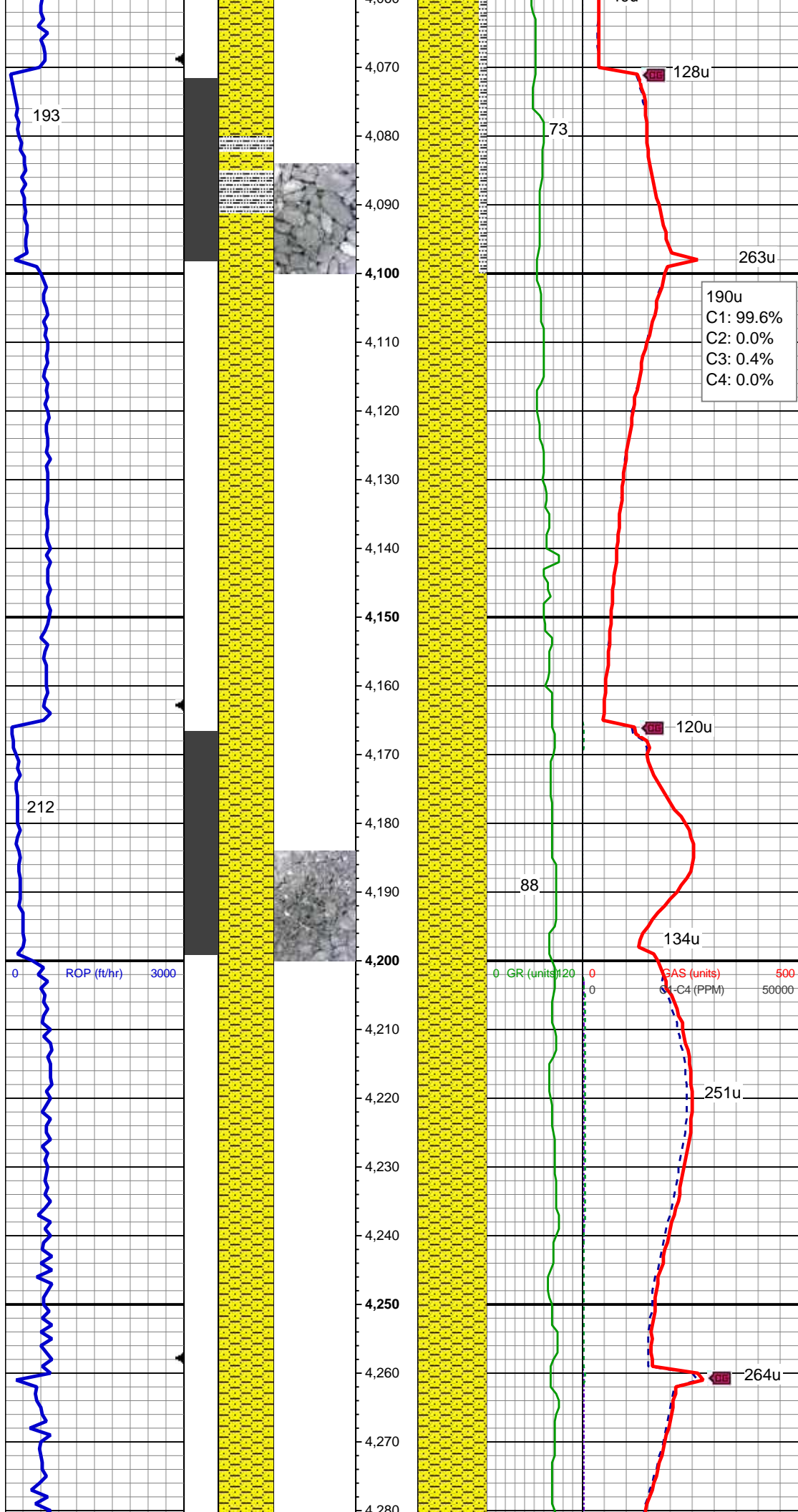
SS: lt gy, off wh, s&p, vf-f grn, sb rd-db ang, mod w srt, frm-friable, glau, mod calc SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 3,925'
TVD: 3,906.53'
Inclination: 13.4 °
Azimuth: 163.3°
VS: 8.36'

SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc SS: lt gy, off wh, s&p, vf-f grn, sb rd-db ang, mod w srt, frm-friable, glau, mod calc

MD: 4,019'
TVD: 3,997.76'
Inclination: 14.5 °
Azimuth: 164.5°
VS: 7.46'

SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc SLTY SH: lt gy-gy, mod sft-frm, sb blkly-sb plty, sdy rthy tex, sl calc

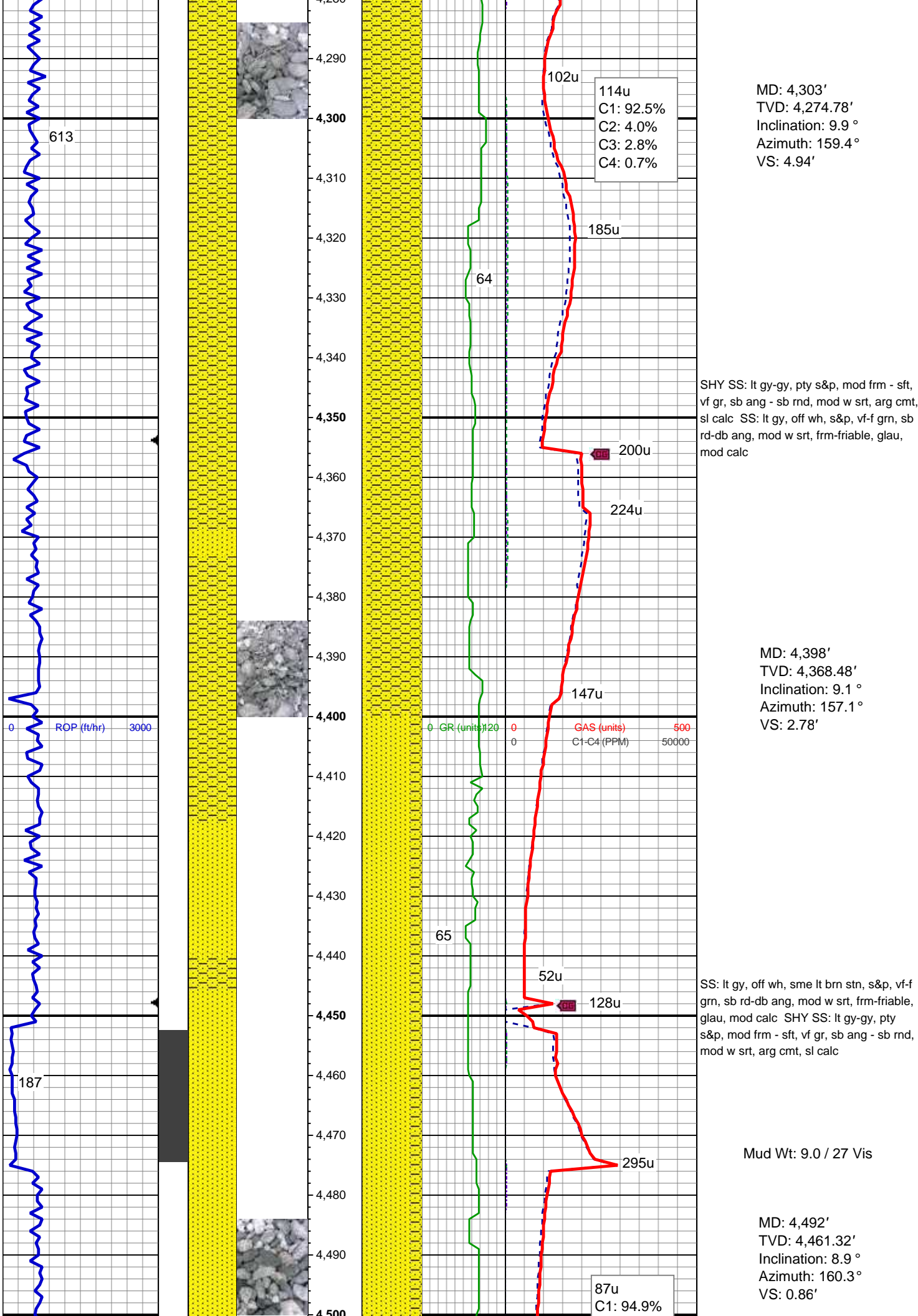


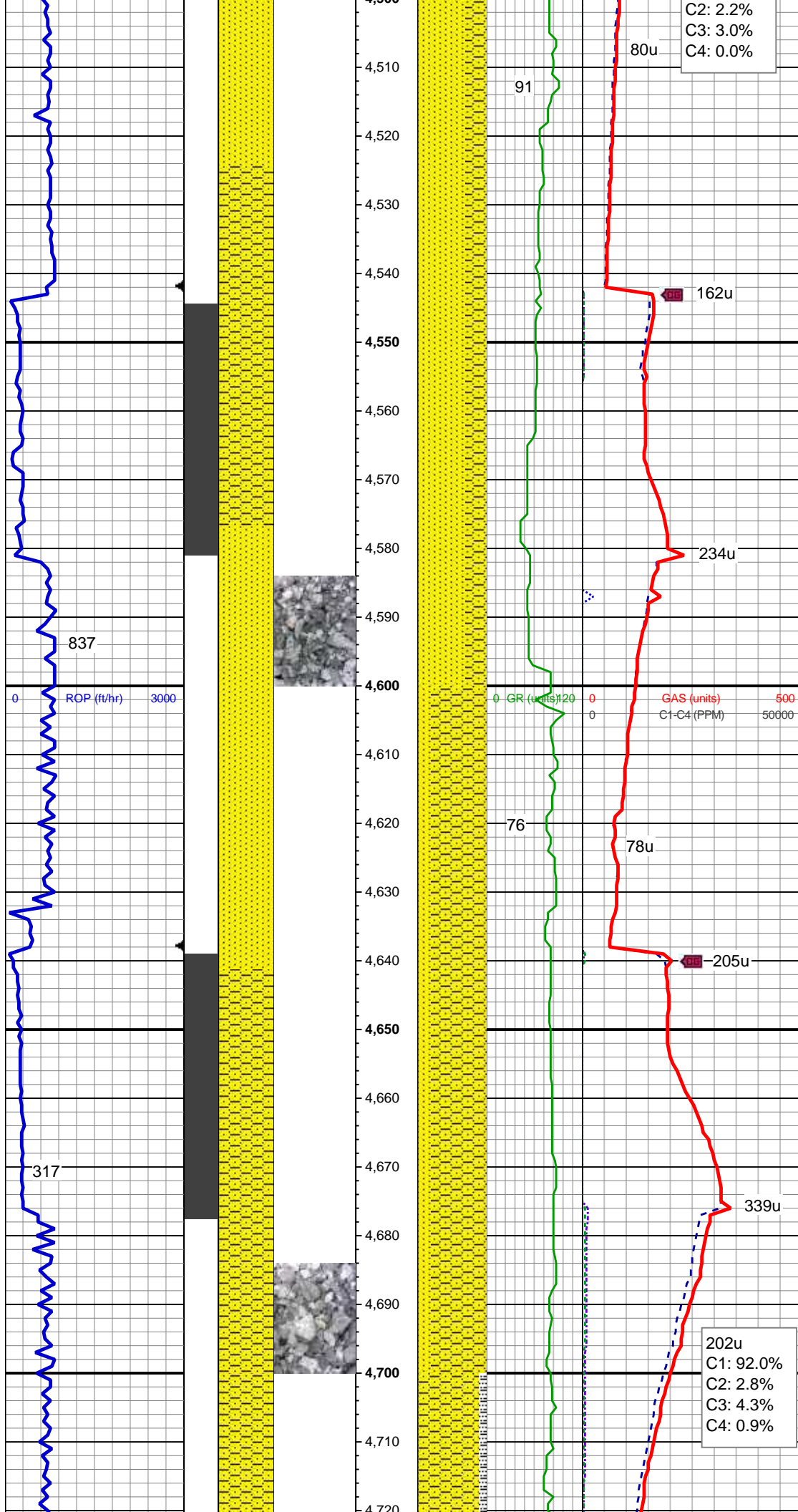
MD: 4,114'
TVD: 4,089.73'
Inclination: 14.5 °
Azimuth: 165.2 °
VS: 6.89'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf-f gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc, tr slty sh

MD: 4,209'
TVD: 4,182.35'
Inclination: 11.1 °
Azimuth: 163.7 °
VS: 6.29'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf-f gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc, tr ss, rr lmst





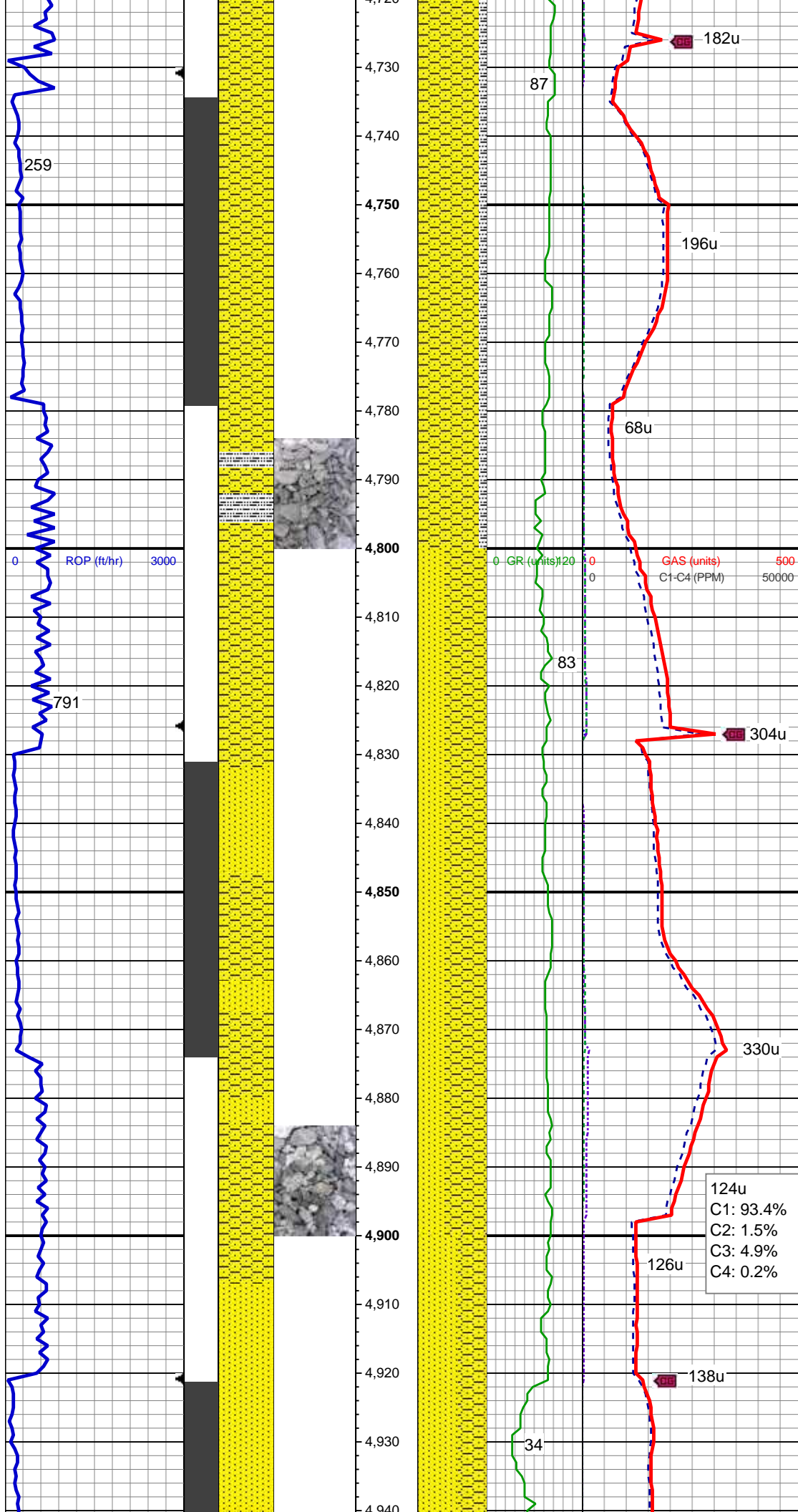
SS: lt gy, off wh, sme lt brn stn, s&p, vf-f grn, sb rd-db ang, mod w srt, frm-friable, glau, mod calc SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 4,587'
TVD: 4,555.11'
Inclination: 9.4 °
Azimuth: 162.3°
VS: -0.42'

SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc SS: lt gy, off wh, sme lt brn stn, s&p, vf-f grn, sb rd-db ang, mod w srt, frm-friable, glau, mod calc

MD: 4,682'
TVD: 4,648.84'
Inclination: 9.4 °
Azimuth: 167.2°
VS: -0.82'

Mud Wt: 8.95 / 29 Vis



SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc SLTY SH: lt gy-gy, mod sft-frm,
sb blk-y-sb plty, sdy rthy tex, sl calc

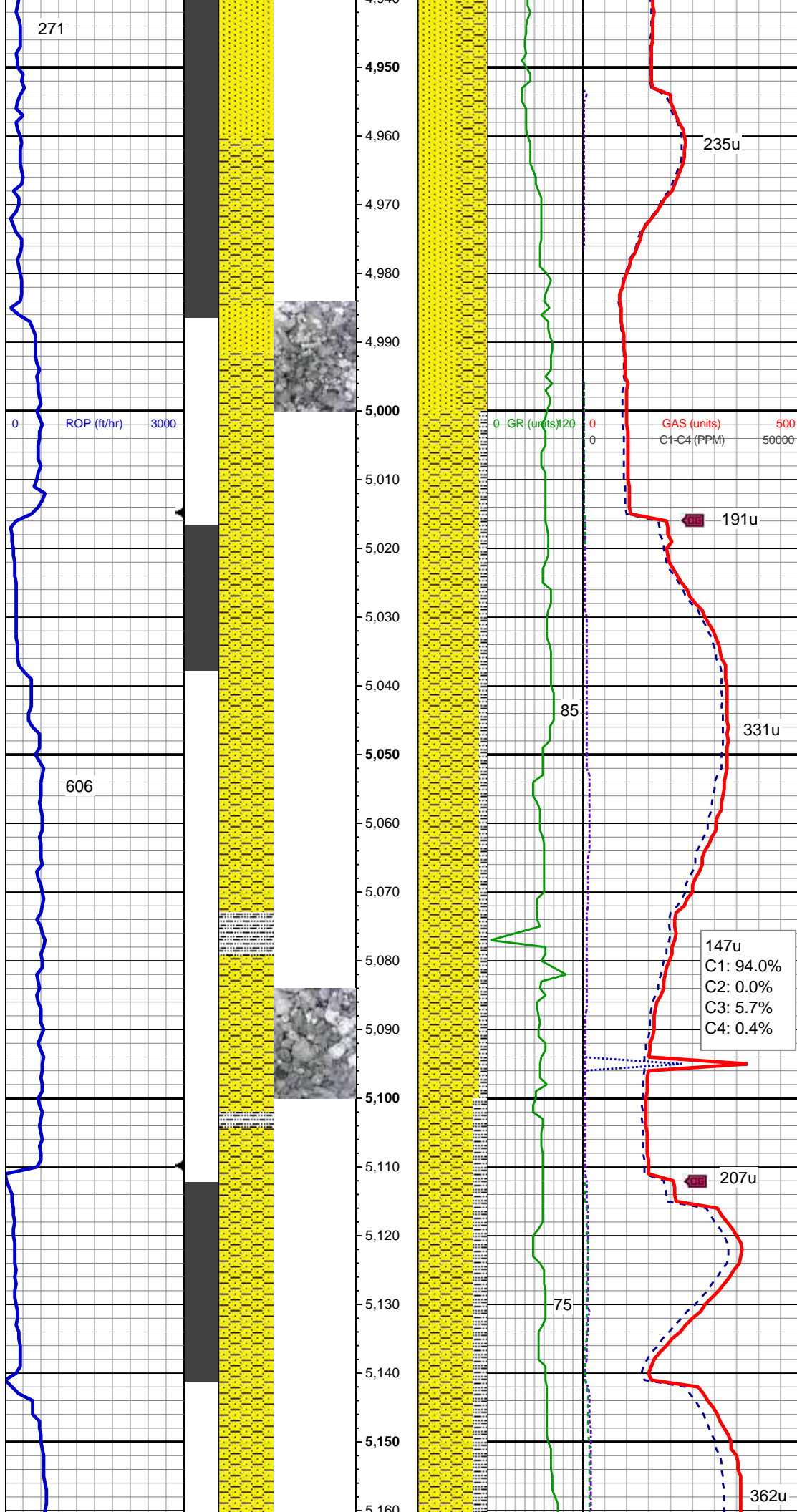
MD: 4,777'
TVD: 4,742.66'
Inclination: 8.7 °
Azimuth: 160.7 °
VS: -1.37'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
vf gr, sb ang - sb rnd, mod w srt, arg cmt,
sl calc SS: lt gy, off wh, s&p, vf-f grn, sb
rd-db ang, mod w srt, frm-friable, glau,
mod calc

MD: 4,871'
TVD: 4,835.61'
Inclination: 8.4 °
Azimuth: 166.5 °
VS: -2.02'

Mud Wt: 9.0 / 28 Vis

124u
C1: 93.4%
C2: 1.5%
C3: 4.9%
C4: 0.2%



SS: lt gy, off wh, sme s&p, f-m grn, sb rd-db ang, mod w srt, frm-friable, glau, mod calc SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc

MD: 4,966'
TVD: 4,929.55'
Inclination: 8.8 °
Azimuth: 170 °
VS: -1.5'

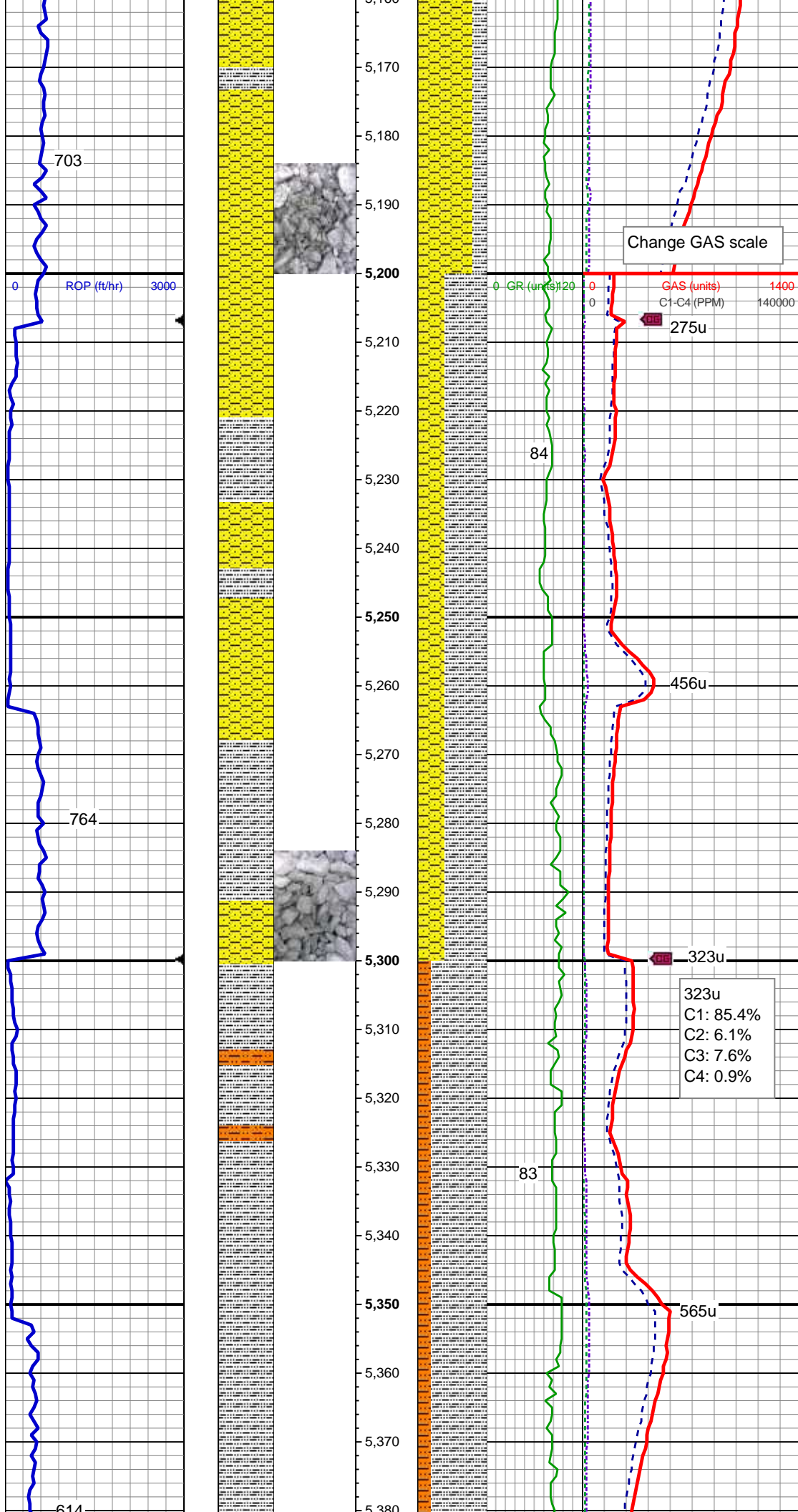
SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc SS: lt gy, off wh, s&p, vf-f grn, sb rd-db ang, mod w srt, frm-friable, glau, mod calc SLTY SH: lt gy-gy, mod sft-frm, sb blk-y-sb plty, sdy rthy tex, sl calc

MD: 5,061'
TVD: 5,023.34'
Inclination: 9.5 °
Azimuth: 170.2 °
VS: -0.47'

Mud Wt: 8.85 / 28 Vis

SHY SS: lt gy-gy, pty s&p, mod frm - sft, vf gr, sb ang - sb rnd, mod w srt, arg cmt, sl calc SLTY SH: lt gy-gy, mod sft-frm, sb blk-y-sb plty, sdy rthy tex, sl calc

MD: 5,155'



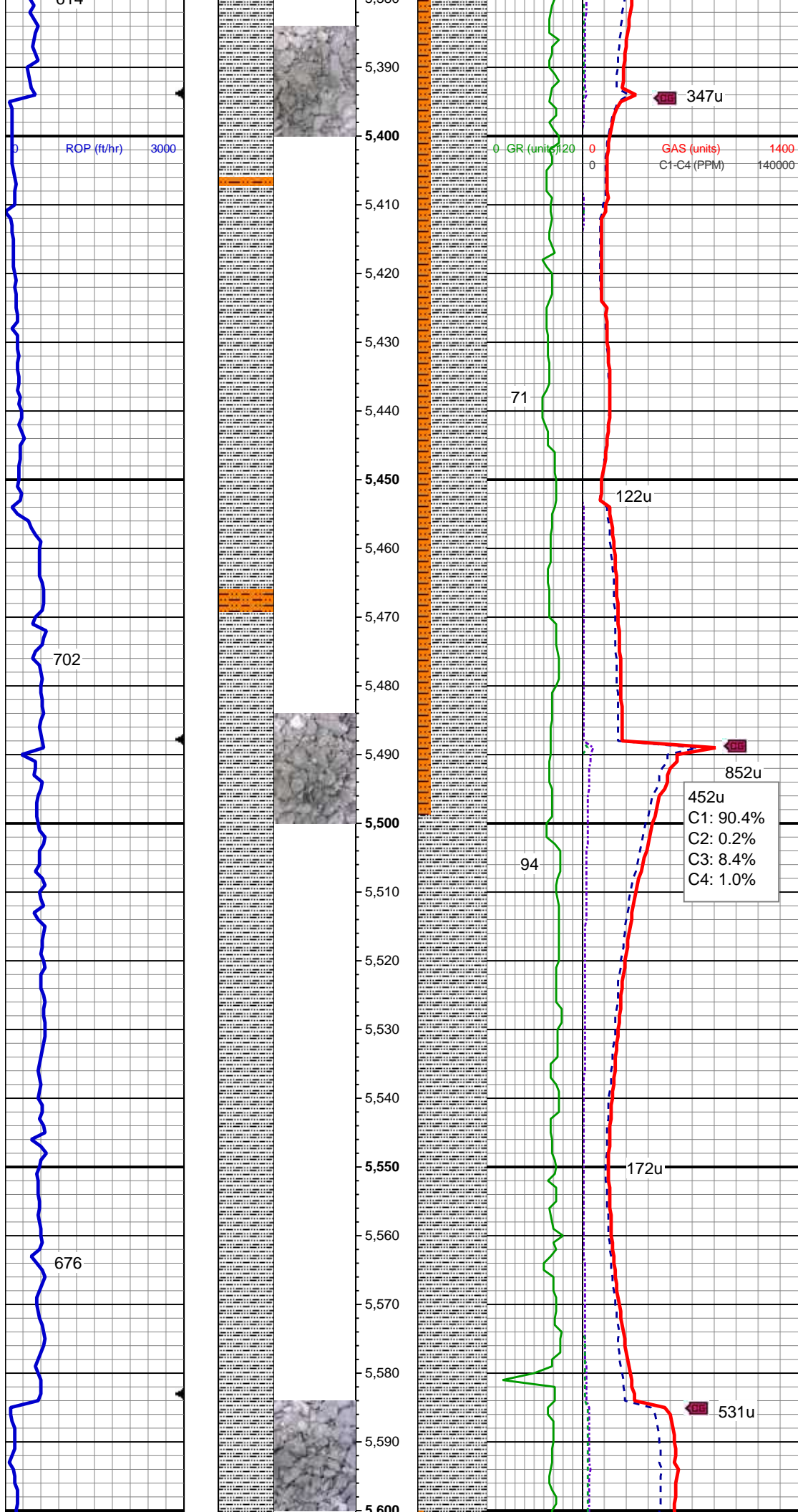
TVD: 5,116.1'
 Inclination: 9.1 °
 Azimuth: 173.1 °
 VS: 0.96'

SHY SS: lt gy-gy, pty s&p, mod frm - sft,
 vf gr, sb ang - sb rnd, mod w srt, arg cmt,
 sl calc SLTY SH: lt gy-gy, mod sft-frm,
 sb blkly-sb plty, sdy rthy tex, sl calc

MD: 5,250'
 TVD: 5,209.89'
 Inclination: 9.2 °
 Azimuth: 168.4 °
 VS: 2.16'

MD: 5,345'
 TVD: 5,303.69'
 Inclination: 9.1 °
 Azimuth: 169.3 °
 VS: 2.86'

SLTY SH: lt gy-gy, mod sft-frm, sb blkly-sb
 plty, sdy rthy tex, sl calc SHY SLTST: lt
 gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
 - sb rnd, mod w srt, arg cmt, sl calc



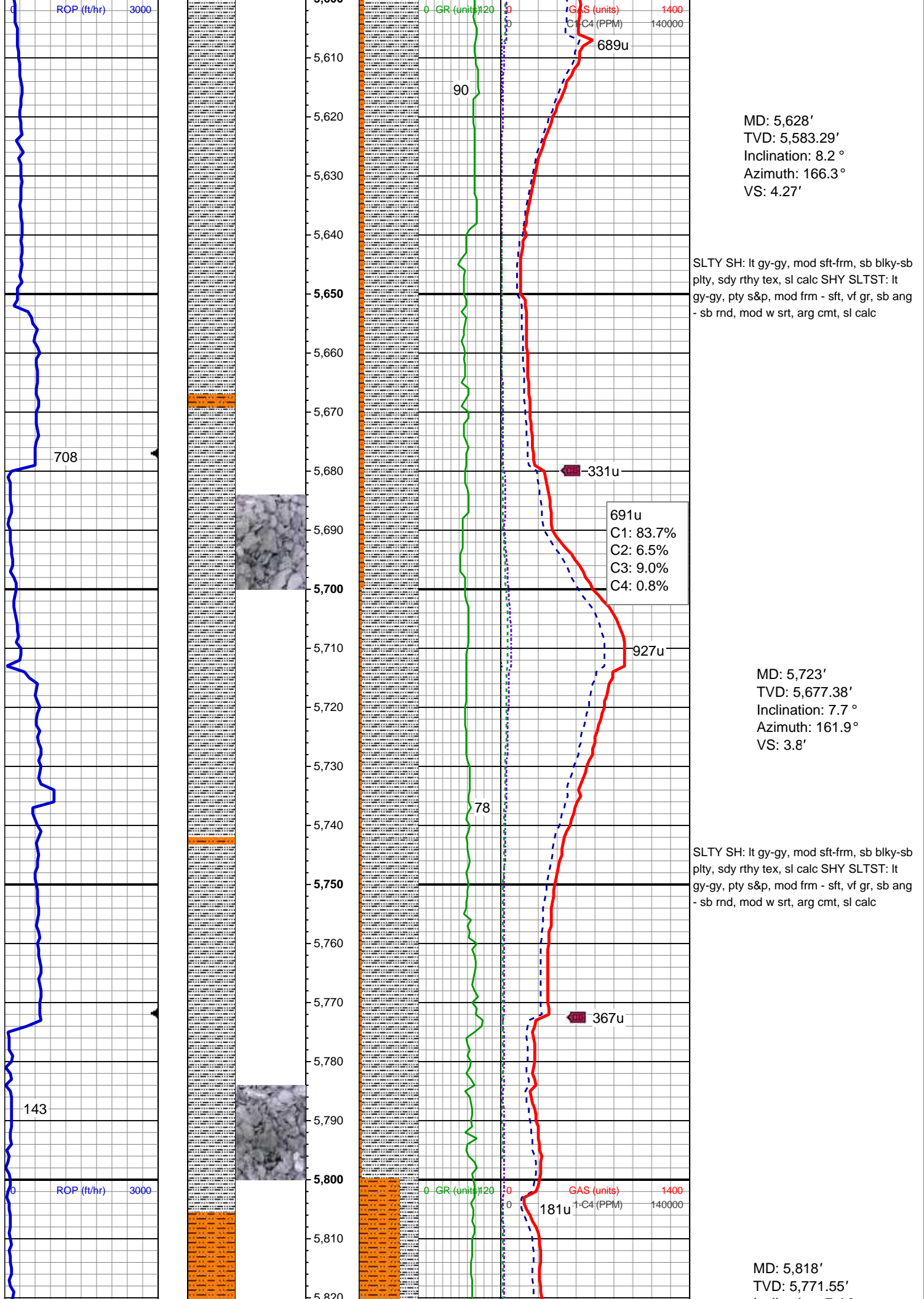
Mud Wt: 8.90 / 28 Vis

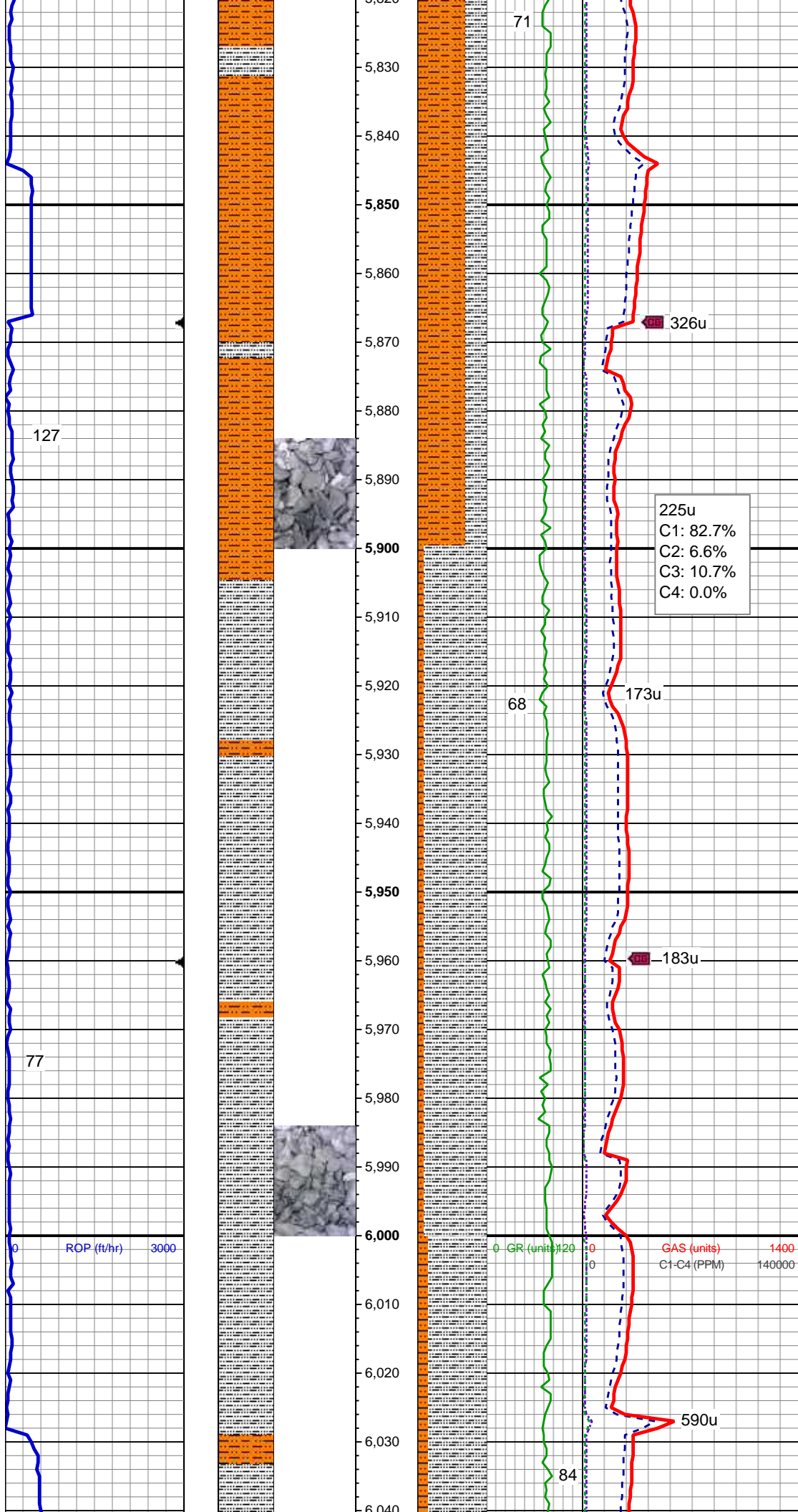
MD: 5,439'
TVD: 5,396.37'
Inclination: 10.1 °
Azimuth: 167.4 °
VS: 3.43'

SLTY SH: It gy-gy, mod sft frm, sb blkly-sb
ply, sdy rthy tex, sl calc SHY SLTST: It
gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
- sb rnd, mod w srt, arg cmt, sl calc

MD: 5,534'
TVD: 5,490.21'
Inclination: 7.8 °
Azimuth: 169.1 °
VS: 3.93'

SLTY SH: It gy-gy, mod sft frm, sb blkly-sb
ply, sdy rthy tex, sl calc





Inclination: 7.4 °
Azimuth: 163.3 °
VS: 3.01'

SHY SLTST: lt gy-gy, pty s&p, mod frm -
sft, vf gr, sb ang - sb rnd, mod w srt, arg
cmt, sl calc SLTY SH: lt gy-gy, mod
sft-frm, sb blk-y-sb plty, sdy rthy tex, sl calc

Mud Wt: 8.70 / 26 Vis

MD: 5,912'
TVD: 5,864.73'
Inclination: 7.8 °
Azimuth: 168.1 °
VS: 2.92'

SLTY SH: lt gy-gy, mod sft-frm, sb blk-y-sb
plty, sdy rthy tex, sl calc SHY SLTST: lt
gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
- sb rnd, mod w srt, arg cmt, sl calc

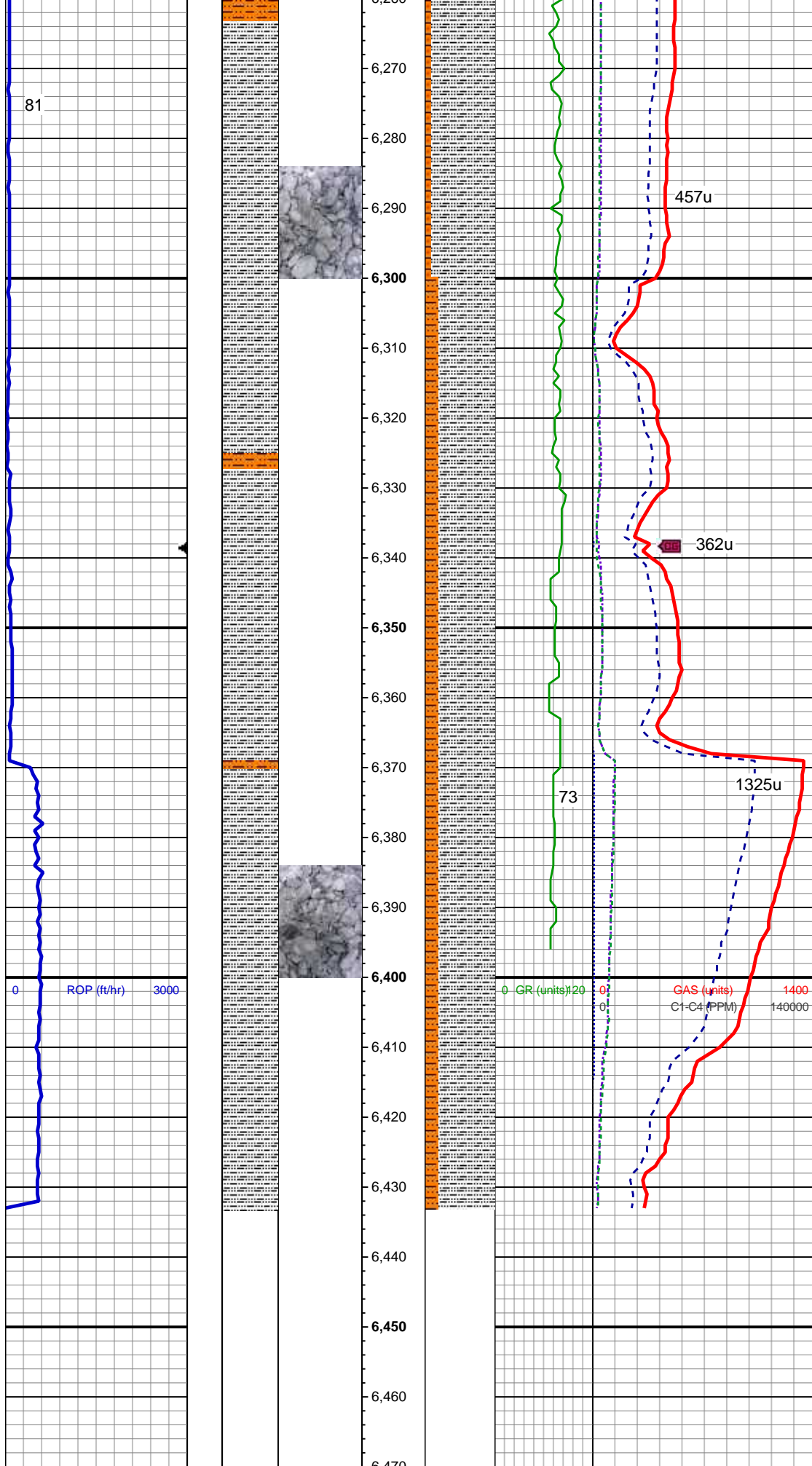
MD: 6,007'
TVD: 5,958.61'
Inclination: 9.8 °
Azimuth: 167.4 °
VS: 3.3'

SLTY SH: It gy-gy, mod sft frm, sb blk-y-sb
 plty, sdy rthy tex, sl calc SHY SLTST: It
 gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
 - sb rnd, mod w srt, arg cmt, sl calc

SLTY SH: It gy-gy, mod sft frm, sb blk-y-sb
 plty, sdy rthy tex, sl calc SHY SLTST: It
 gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
 - sb rnd. mod w srt. arg cmt. sl calc

MD: 6,195'
TVD: 6,143.93'
Inclination: 9.5 °
Azimuth: 170.3°
VS: 4.77'

SLTY SH: It gy-gy, mod sft frm, sb blk-y-sb
 plty, sdy rthy tex, sl calc SHY SLTST: It
 gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
 - sb rnd. mod w srt. arg cm't. sl calc



MD: 6,289'
TVD: 6,236.26'
Inclination: 12.1 °
Azimuth: 173 °
VS: 6.49'

Mud Wt: 8.90 / 30 Vis

SLTY SH: It gy-gy, mod sft frm, sb blk-sb
pty, sdy rthy tex, sl calc SHY SLTST: It
gy-gy, pty s&p, mod frm - sft, vf gr, sb ang
- sb rnd, mod w srt, arg cmt, sl calc

MD: 6,384'
TVD: 6,329.01'
Inclination: 12.9 °
Azimuth: 170.5 °
VS: 8.47'

TD @ 6433' MD
03/10/2014 @ 04:25 hrs

TOOH FOR BHA #2
LOG CONTINUES ON MPlot
"Cecil Farms PC
IO6-67HN(Horz)"

Thank you for choosing
Columbine Logging Inc.